1. (Currently Amended) A system having a data sender, a data receiver, and at least one communications device for transmitting in a network, wherein the system increases the efficiency of data transmissions within the network and comprises:

- a first error control subsystem, coupled to the data sender, and comprising:
  (a) a first protocol converter that separates incoming network data traffic by quality of service requirements and that adaptively converts each of the separated datastreams into a ~~protocol independent~~ data link format that is independent of a data sender protocol and is based on the quality of service requirements, and
  (b) a first error control module that receives the converted datastreams, encodes the datastreams by applying forward error correction (FEC) to the datastreams based on the quality of service requirements so that data associated with a first quality of service requirement is encoded using a first ~~type of~~ FEC encoding scheme and data associated with a second quality of service requirement is encoded using a second ~~type of~~ FEC encoding scheme, wherein the first FEC encoding scheme is distinct from the second FEC encoding scheme, and outputs the encoded datastreams to the communications device for transmission over the network; and
- a second error control subsystem, coupled to the data receiver and a second network, and comprising:
  (a) a second error control module, coupled to the second network, and which receives and decodes the encoded datastreams, and
  (b) a second protocol converter that reformats the decoded data into data consistent with the protocol of the second network.

2. (Previously Presented) The system according to claim 1 in which the second error control module transmits periodic control messages to the first module describing a success or failure of a transmission of data.

3. (Previously Presented) The system according to claim 1 further comprising a data rate converter that allocates available bandwidth for particular communications based upon a weighted-priority assigned each communication.

4. (Previously Presented) The system according to claim 3 in which the data rate converter is adapted to:

- determine the priority of each communication being sent by the data sender over the network;
- assign each communication a selected weight factor depending upon the priority of each communication; and
- initially allocate bandwidth to a particular communication over a selected data link within the network based on at least one factor selected from the group consisting of (a) the bandwidth available on that data link for all communications, (b) the weight factor assigned that particular communication, and (c) the quality of the data link.

5. (Cancelled).

6. (Cancelled).

7. (Cancelled).

8. (Previously Presented) The method of claim 47 further comprising the steps of:

- identifying each datastream that comprises quality critical data; and
- applying automatic retransmit protocols to each datastream comprising quality critical data.

9. (Currently Amended) The method of claim 47 further comprising the step of adaptively modifying the payload length of packets based upon one of the following: (a) the quality of the link over which a particular packet will be transmitted, (b) the quality of service associated with the particular packet, or (c) both of factors (a) and (b).

10. (Currently Amended) The method of claim 47 further comprising the step of adaptively converting the data packets of a selected one of the datastreams from a ~~first~~ data sender protocol to a ~~protocol independent~~ data link format that is independent of the data sender protocol, wherein the ~~protocol independent~~ data link format changes as (a) the quality of service requirements associated with each datastream, (b) the quality of the data link associated with each datastream, or (c) both the quality of service requirement and the quality of the data link associated with each datastream changes.

11. (Currently Amended) The method of claim 10, wherein a first forward error correction encoding scheme is applied to the selected datastream and the encoded datastream is transmitted over a data link, further comprising the steps of:

- receiving the ~~protocol independent~~ encoded datastream following its transmission over ~~a~~ the data link; and
- examining the received datastream and reconstructing packets from the received datastream into a ~~second~~ data receiver protocol adapted

to a network to which the data link couples, wherein the ~~first~~ data sender protocol and the ~~second~~ data receiver protocol are distinct.

12. (Currently Amended) A transmission error control system for increasing the efficiency of data transmissions within a network, the system comprising:

- a first protocol converter coupled to an application that provides packetized data in a ~~first~~ data sender protocol, wherein the protocol converter adaptively converts the packetized data from the ~~first~~ data sender protocol into a ~~protocol independent~~ data link format that is independent of the data sender protocol and adaptively modifies a payload length of the data, wherein the conversion and the modification are adaptive and change as (a) the selected quality of service level associated with each datastream, (b) an estimated or measured quality of the data link associated with each datastream, or (c) both of factors (a) and (b) changes, and wherein the protocol converter splits the converted data into multiple datastreams that each have a selected, but different, quality of service level; and
- a first error control module, coupled to the protocol converter, that adaptively encodes the data within each of the multiple datastreams by ~~modifying a type of~~ changing the forward error correction encoding scheme applied to the datastream as (a) the selected quality of service level associated with each datastream, (b) an estimated or measured quality of the data link over which each datastream will be transmitted, or (c) ~~or~~ both of factors (a) and (b) changes, so that a first datastream is encoded using a different forward error correction encoding scheme ~~differently~~ than a second datastream when the quality of service level or the quality of the data link associated with the first datastream differs

from the quality of service level or the quality of the data link associated with the second datastream.

13. (Cancelled).

14. (Cancelled).

15. (Cancelled).

16. (Cancelled).

17. (Cancelled).

18. (Previously Presented) The system according to claim 12 in which the error control module:

- separates the datastreams into time critical and quality critical datastreams;
- couples to a data link and forwards time-critical datastreams directly thereto; and
- forwards quality critical datastreams to a retransmission module that monitors transmission of the quality critical datastreams and retransmits said quality critical datastreams based on at least one parameter.

19. (Previously Presented) The system according to claim 18 in which the at least one parameter is independent of any estimate of the round trip time necessary for the transmission to reach its destination and for the error control module thereafter to receive an acknowledgment.

20. (Currently Amended) The system according to claim 12 further comprising a second protocol converter coupled to an application that provides data packetized in a second data sender protocol that is distinct from the ~~first~~ data sender protocol, wherein the second protocol converter:

- adaptively converts the packetized data in the second data sender protocol into the ~~protocol independent~~ data link format, wherein the data link format is independent of the second data sender protocol; and
- the converted data from the second protocol converter is concatenated with the converted data from the first protocol converter into the multiple datastreams.

21. (Previously Presented) The system according to claim 12 further comprising a data rate converter that allocates available bandwidth for available bit rate transmissions based upon an assigned weighted-priority.

22. (Cancelled).

23. (Previously Presented) A method for dynamically optimizing error control within a network using an asynchronous transfer mode protocol, the method comprising:

- determining whether a selected data transmission includes time critical or quality critical data;
- parsing at least a portion of the quality critical data into automatic retransmit request packet data units ("ARQ-PDUs");

- modifying a payload length of the ARQ-PDUs based on quality of a data link assigned to carry the selected data transmission in order to improve throughput efficiency; and
- retransmitting, upon satisfaction of a preselected criteria, the quality critical data in order to ensure that said data reaches its destination.

24. (Previously Presented) The method of claim 23 further comprising the step of measuring the quality of the data link assigned to carry the selected data transmission.

25. (Previously Presented) The method of claim 24 in which the quality measuring is performed by analyzing either (1) information received from a destination receiver within the ATM network or (2) statistics indicating the error rate of transmitted ARQ-PDUs.

26. (Previously Presented) The method of claim 24 in which the payload length ("L") is calculated as follows: L=48*i-4, wherein i is the sum of the header and trailer for the selected ARQ-PDUs to be transmitted.

27. (Previously Presented) The method of claim 24 further comprising the step of updating a generation rate of control packets based on the modified payload length.

28. (Previously Presented) The method of claim 24 further comprising the step of transmitting periodic control messages that describe the success or failure of a particular quality critical data transmission.

29. (Currently Amended) The method of claim 23 further comprising the step of applying to time critical data a forward error correction encoding scheme that varies according to the quality of the data link.

30. (Previously Presented) The method of claim 24 further comprising the step of determining the quality of service requirements associated with the selected data transmission.

31. (Previously Presented) The method of claim 30 further comprising the step of determining the number of attempts to retransmit a particular quality critical data transmission based upon the determined quality of service requirement associated with the selected data transmission.

32. (Currently Amended) A system deployed in a network having a data sender, a data receiver, and a wireless transmission device, the system comprising:

- a first asynchronous transfer mode adaptation layer that delivers quality critical data from the data sender to a network device;
- a second asynchronous transfer mode adaptation layer that delivers time-critical data from the data sender to a network device; and
- an error control module that modifies the payload length of the data, ~~and~~ that encodes the data by applying a forward error correction (FEC) encoding scheme to the data, wherein the modification of the payload length and the encoding of the data are adaptive and based on quality of service requirements of the data, so that data associated with a first quality of service requirement is encoded using a first FEC encoding scheme and has a first payload length ~~differently than~~ and data associated with a second quality of service requirement is encoded

using a second FEC encoding scheme and has a second payload length, and that outputs the data to the wireless transmission device.

33. (Previously Presented) The system according to claim 32 further comprising a protocol converter module that separates network data traffic by data type.

34. (Previously Presented) The system according to claim 33 in which the data type is the quality of service level for the data.

35. (Previously Presented) The system according to claim 32 in which the error control module is adapted to determine whether selected criteria are satisfied and thereafter retransmit quality critical data in order to ensure delivery.

36. (Previously Presented) The system according to claim 35 wherein the first asynchronous transfer mode adaptation layer is coupled to an IP stack providing the time-critical or quality-critical data in the form of an IP packet and further comprises a first sublayer that creates a data unit containing the IP packet.

37. (Previously Presented) The method or system of claim 47 in which the ~~type of~~ forward error correction encoding scheme is selected from the group consisting of (a) a Reed-Solomon forward error correction scheme; (b) a convolutional forward error correction scheme; (c) a Turbo Product Code error correction scheme; and (d) any combination of the foregoing.

38. (Cancelled).

39. (Cancelled).

40. (Currently Amended) The method or system of claim 12 in which the forward error correction ~~type~~ encoding scheme is selected from the group consisting of (a) a Reed-Solomon forward error correction scheme; (b) a convolutional forward error correction scheme; (c) a Turbo Product Code error correction scheme; and (d) any combination of the foregoing.

41. (Currently Amended) The method or system of claim 29 in which the forward error correction ~~type~~ encoding scheme is selected from the group consisting of (a) a Reed-Solomon forward error correction scheme; (b) a convolutional forward error correction scheme; (c) a Turbo Product Code error correction scheme; and (d) any combination of the foregoing.

42. (Currently Amended) The system according to claim 1, wherein the forward error correction encoding scheme applied by the first error control module is also based on quality of a data link used to transmit the data between the first error control subsystem and the second error control subsystem.

43. (Currently Amended) The system according to claim 1, wherein the ~~protocol-independent~~ data link format changes as the quality of service requirements change.

44. (Previously Presented) The system according to claim 1, wherein the conversion by the first protocol converter is also based on quality of a data link used to transmit the data between the first error control subsystem and the second error control subsystem.

45. (Previously Presented) The system according to claim 1, wherein the first protocol converter modifies a payload length of the data based on the quality of service requirements.

46. (Previously Presented) The system according to claim 45, wherein the modification of the payload length by the first protocol converter is also based on quality of a data link used to transmit the data between the first error control subsystem and the second error control subsystem.

47. (Currently Amended) A method for increasing the transmission efficiency of a network, the method comprising:

determining a quality of service requirement for each of a plurality of data packets;

identifying a plurality of datastreams, wherein each datastream includes data packets associated with similar quality of service requirements; and

adaptively applying forward error correction on each of the datastreams, wherein different ~~types of~~ forward error correction encoding schemes are applied to different datastreams based on (a) the quality of service requirements associated with each datastream, (b) a quality of the data link associated with each datastream, or (c) both the quality of service requirement and the quality of the data link associated with each datastream.

48. (Previously Presented) The system according to claim 12, wherein the first error control subsystem receives periodic control messages from a second error control module describing a successful or unsuccessful data transmission.

49. (Previously Presented) The system according to claim 48 wherein the first error control subsystem receives data from a second error control module from

which to measure or estimate a quality of a data link between the first control module and the second control module.

50. (Currently Amended) A method for increasing the transmission efficiency of a network, the method comprising:

determining a quality of service requirement for each of a plurality of data packets;

identifying a plurality of datastreams, wherein each datastream includes data packets associated with similar quality of service requirements;

adaptively converting the data packets associated with a selected datastream from a ~~first~~ data sender protocol into a ~~protocol-independent~~ data link format that is independent of the data sender protocol,

adaptively modifying a payload length of the data packets within the selected datastream;

wherein the conversion and the payload modification change as (a) the quality of service requirement associated with the datastream, (b) a quality of a data link associated with the datastream, or (c) both of factors (a) and (b) changes.

51. (Currently Amended) The method according to claim 50, further comprising:

adaptively applying forward error correction on the selected datastream, wherein different ~~types of~~ forward error correction encoding schemes are applied to different datastreams based on (a) the quality of service requirement associated with the datastream, (b) a quality of a data link associated with the datastream, or (c) both of factors (a) and (b).

52. (Currently Amended) The system according to claim 12, wherein the first error control module modifies a length of the forward error correction applied to the datastream after ~~modifying the type of~~ changing the forward error correction encoding scheme as (a) the selected quality of service level associated with the datastream, (b) the estimated or measured quality of the data link associated with the datastream, or (c) both of factors (a) and (b) changes.